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THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

ANOVA Tables

Basic Table:

Source Of Variation	Sum Of Squares*	Degrees Of Freedom	Mean Square	F Test Statistic	F Critical Value
Treatments (k) (# of population)	SSTR	k-1 (treatments-1)	SSTR/df = MSTR	MSTR/MSE (mean square of the treatments/ mean square error)	Use F chart
Error (random variable)	SSE	n_T-k (population - #of treatments)	SSE/df = MSE		
Total	**Total**	n_T-1 (population-1)			

ANOVA Table with Blocks:

- Use when the main category being tested has sub-categories (blocks).

Source Of Variation	Sum Of Squares *	Degrees Of Freedom	Mean Square	F Test Statistic	F Critical Value
Treatments	SST	k-1	SST/k-1 = MSTR	MSTR/MSE	Use F chart
Blocks	SSB	b-1	SSB/b-1 = MSB	MSB/MSE	
Error	SSE	(k-1)(b-1)	SSE/(k-1)(b-1) = MSE		
Total	**SST**	**n_T-1**			

ANOVA Two Factor with Replication:

- Use when the 2+ main categories being tested have sub-categories.

Source Of Variation	Sum Of Squares*	Degrees Of Freedom	Mean Square	F Test Statistic	F Critical Value
Factor A	SSA	a-1	SSA/a-1 = MSA	MSA/MSE	Use the F chart
Factor B	SSB	b-1	SSB/b-1 = MSB	MSB/MSE	
Interaction	SSAB	(a-1)(b-1)	SSAB/(a-1)(b-1) = MSAB	MSAB/(a-1)(b-1)	
Error	SSE	ab(r-1)	SSE/ab(n-1) = MSE		
Total	**SST**	n_T-1			

***Sum of squares is calculated by:** $\Sigma (x_i - \bar{x})^2$ [take each data point, subtract the sample mean from each, square each difference, and add the squared numbers]

For more information, visit a tutor. All appointments are available in-person at the Student Success Center, located in the Library, or online. Adapted from Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., & Cochran, J. J. (2018). *Statistics for Business & Economics* (13th Edition). Boston, MA: Cengage Learning.

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